

WEDNESDAY, JANUARY 27TH, 1892.

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ANNUAL GENERAL MEETING.

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The President, Professor Haswell, M.A., D.Sc., in the Chair.

The minutes of the last Annual Meeting were read and confirmed.

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PRESIDENT'S ADDRESS.

The past year is one which, I have little doubt, will always be looked back upon as one of the most eventful in the history of this Society. During its course we have lost by death two of our most valued members, one of whom had long been in many ways the mainstay of the Society, and we have been placed by a generous bequest in a position in which our opportunities of doing good work ought to be considerably increased.

The attendance at the monthly meetings during the year has, on the whole, been satisfactory : and a number of papers of interest and value have been read. In addition to the reading of these there have been exhibitions of many interesting objects, often suggestive of new fields of inquiry.

During the year seven new members have been elected, and five have been lost by death or retirement. Four members have died during the year, namely, Mr. C. S. Wilkinson, Mr. K. H. Bennett, Sir William Macleay, and Sir John Hay.

Charles Smith Wilkinson, Government Geologist, who died on August 25th at the comparatively early age of 47, was born in England in 1843. For some 25 years he was engaged in the work of geological surveying in this colony and in Victoria, and, though the demands of his official work, relating in great measure to the development of mining industries, left him but little leisure, he

was the author of several important contributions to Australian geology, partly published in the Annual Reports of the Department of Mines, partly in the Proceedings of the Royal Society of N.S. Wales, partly in those of this Society. His duties took him frequently away from Sydney to various parts of the country; but when in town he was a regular attendant at the meetings of this Society, of which he was President in the years 1884 and 1885. His contributions to the Proceedings of this Society were the following :—

(1) Notes on a collection of Geological specimens collected by William Macleay, Esq., F.L.S., from the Coasts of New Guinea, Cape Yorke, and the neighbouring Islands. [Vol. I., p. 113.]

(2) Notes on the Abercrombie Caves. [Vol. IV., p. 460.]

(3) Notes on some Customs of the Aborigines of the Albert District, New South Wales. [Vol. VIII., p. 436.]

(4) Presidential Address, 1884. [Vol. VIII., p. 535.]

(5) Presidential Address, 1885. [Vol. IX., p. 1207.]

Kenrick Harold Bennett, who died on June 30th, was one of that unfortunately not too numerous school of educated bush-naturalists, who spending their lives in the country, engaged in pastoral and other pursuits, are yet sufficiently in touch with societies such as ours, to permit of their observations being recorded and utilised. Mr. Bennett's observations were chiefly on birds—their habits, their nesting, and their eggs; and he contributed a number of new facts in connection with these subjects, many embodied in Mr. A. J. North's "Catalogue of Birds' Nests and Eggs," published by the Australian Museum; but he at one time devoted much attention to native weapons, implements, and utensils, in which he was well versed. Several papers from his pen have been published in the "Proceedings" of this Society.

More recently we have to deplore also the death of Sir William Macleay, to whom this Society owes, if not its very existence, at least its prosperous maintenance for a good many years, and to whom Australian Science is indebted for many benefits. William

Macleay was born in Scotland, but, coming to New South Wales as a very young man, he became the most patriotic of colonists, and spent all the rest of his life in this country, never once leaving it except on the occasion of his expedition to New Guinea. During all the earlier part of his life in this colony he was engaged in pastoral pursuits on a large scale, being concerned in very extensive stations in the district of the Murrumbidgee. He also during these earlier years took an active share in the political life of the country. But during the last 15 or 20 years of his life, though he never ceased to take a keen interest in all public matters and remained a member of the Upper House, and though until comparatively recently he retained the ownership of large stations, yet he gave a very large share of his time to the cultivation of Natural Science, and left his stations to his managers—very rarely indeed leaving Sydney even for a single day. With remarkable single-mindedness and still more remarkable absence of ostentation, he set himself to advance the study of the Natural History Sciences in this colony; and this in a manner which—though, in common with everything he did, not by any means free from the impress of a strongly-marked individuality—was characterised by a very exceptional breadth and liberality of view.

There are several ways in which an individual possessed of the necessary means and the necessary enlightenment may further the ends of science. . He may himself add by his own investigations to the sum total of our knowledge. He may, without himself prosecuting any researches, accumulate in an intelligent way material with the aid of which others may be enabled to advance the science in which he is interested. He may by his personal influence and example be the means of inducing others to devote their energies to scientific work. He may provide facilities, as, for example, by building laboratories or biological stations, furnishing instruments and apparatus, and forming collections of scientific books, by which scientific workers may carry on their work with convenience and thoroughness. Or he may provide funds by means of which investigators may be enabled to devote all their time and energy to the work of research.

Now I think I may say that Sir William Macleay contributed to the progress of science to a greater or less extent, not in one or two only, but in all of these ways. As an original investigator his name is best known as an entomologist and ichthyologist. In the former field he worked diligently for many years, devoting with the greatest regularity the morning hours of every day to his collections. The results of his work are embodied in a large number of papers contributed to the Transactions of the long defunct Entomological Society of New South Wales; and to the Proceedings of this Society. In these papers very many new species of Australian Coleoptera of a number of families are described. Ichthyology was taken up as a special study at a somewhat later stage—the first contributions to this subject being the papers descriptive of the Fishes of the “Chevert” Expedition, in which the late Dr. H. G. Alleyne collaborated with him; these were published in 1876. In subsequent years numerous papers on this subject appeared, the most important of which were those entitled “Descriptive Catalogue of the Fishes of Australia,” subsequently issued in a separate form, and constituting a most useful and convenient handbook to the study of Australian Fishes. In these entomological and ichthyological studies Sir William Macleay had pretty constantly in view the economic bearing of his subject, as is witnessed by his not infrequent notes on noxious insects in the Entomological Society’s Proceedings, and in many observations contained in his ichthyological papers. His knowledge of the latter subject was brought specially to bear on the subject of the fisheries of the colony in the work of the Royal Commission appointed in 1880 to enquire into the subject of the fisheries—a Commission of which he was elected chairman. The practical outcome of the Report of this Royal Commission was the Fisheries Act of 1881, still in force, under which the Commissioners of Fisheries hold their appointment. The practical side of his character was also shown in the efforts which he made to promote and support various enterprises for securing to the metropolis a more adequate supply of fish.

Sir William Macleay's work as an investigator, though it was extensive and useful, was none of it of an epoch-making character, and it is mainly in the other ways to which I have directed attention that he deserved well of the republic of science. Our distinguished friend Baron von Mueller's phrase "the Mæcænas of Australian natural science" is scarcely an exaggeration; and, though he has had no Horace to enshrine his name in immortal verse, yet his benefits are of such a kind as to ensure that his name will be handed down to future generations.

Sir William Macleay's services to natural science in this colony as a collector of specimens which have proved, and are likely still more to prove, of value in adding to faunistic knowledge are well known to all of you. His most imposing enterprise in this direction was the expedition which he undertook in the year 1875 to the Northern Queensland Coasts, to the Islands of Torres Straits and New Guinea.

In a paper which he read before this Society on his return in October, 1875, Sir William Macleay gave a general sketch of the results of his expedition, of some of the more interesting phenomena observed, and some of the more important collections which had been made. From this I quote the opening paragraph and part of the last:—

"It is now five months since I took my departure from Sydney for a few months' cruise among the Islands of New Guinea and Torres Straits. I was accompanied, as you are aware, by Mr. Masters and Mr. Brazier, both members of our Society, and I had, besides, with me two very competent taxidermists and collectors—Messrs. Spalding and Pettard. The results of the expedition I hope to be able to exhibit to you in a few weeks upon the arrival of the 'Chevert,' now on her way from Cape York. In the meantime, I have jotted down, from memory, a few notes and observations, which, I trust, will not be altogether uninteresting to you." . . . .

"Altogether," he sums up, "I have succeeded in getting together a vast and valuable collection—a collection which, considering the

short time at my disposal, seems wonderful, and which affords undoubted proof of the industry and zeal of my staff of collectors. For it must be remembered that, though the full time of my intended absence from Sydney has expired, the actual time available for the purposes of the voyage was much less than I calculated on. The 'Chevert,' though a good, dry, and comfortable ship, was unable to sail against the wind, and it was so constantly against us during a great part of the expedition that I do not think we had more than sixty days for collecting during the five months' cruize."

Though this expedition was in some measure disappointing—the plans formed before starting not having been fully carried out—yet the result in the acquisition of new and rare objects of natural history of all kinds were very rich. Most of the new forms have since been described, though there are still some groups awaiting investigation. But for many years Macleay was constantly adding to his collection from sources nearer home—having skilled men collecting for him in various parts of Australia, and having for years a taxidermist and articulator, as well as his curator, working in his private Museum. The result was the accumulation of a large collection, embracing all departments of Zoology, which was always accessible to those desiring to make use of it for purposes of research.

This general collection, together with his unrivalled collection of Australian and other insects, partly inherited from William Sharpe Macleay, partly accumulated by himself, he presented, as you are aware, two years ago to the University, stipulating only that a suitable building should be provided, and that the collection should be accessible to members of the Linnean Society of New South Wales and to students of natural science generally, as well as to students of the University. Together with the collections he presented the sum of £6000, the interest of which serves for the salary of the curator. A large, though, unfortunately, not very handsome, building was erected by the Government at the request of the Senate of the University, and the collections were transferred thither in the course of the year before last. The

control of the Macleay Museum has been vested by the Senate in a Committee consisting of the Professor of Geology—Prof. David—and myself as Professor of Biology, and we are fortunate in having an able and zealous curator in Mr. George Masters.

As this collection and its fate must be of special interest to you on the present occasion, I propose to give some brief account of it, the building in which it is housed, and of the way in which it is proposed to utilise it.

The collection is, as might be expected, richest in Australian objects; but many specimens from various parts of the South Pacific region were obtained from various sources, and a considerable number of specimens from other Zoological regions were purchased from dealers. To begin with the anthropological and ethnological collections: there are over 200 crania of aboriginal Australians, and natives of New Guinea and the South Sea Islands, besides six entire skeletons of natives of Torres Straits. There are many hundreds of specimens of weapons and utensils from Australia, New Guinea, Melanesia, etc.

The collection of Mammalia comprises nearly 500 specimens (including skins, skeletons, and skulls) of Marsupials and Monotremes, and nearly 400 specimens of other orders. The collection of Birds is a particularly valuable one, comprising no fewer than about 10,000 specimens—a fair number of representatives of the Australian species mounted, the rest unmounted. There are upwards of 6000 specimens of Reptiles of all orders, mostly in spirits. The collection of Fishes is very extensive; on a rough estimate, there are about 13,000 specimens of all kinds, mounted and in spirits.

Of the Invertebrata the Insecta are the most largely represented, and it would be quite impossible to arrive at even an approximate estimate of the immense multitudes of representatives of all orders that fill the drawers of the insect cabinets.

There is also a fine collection of Crustacea, comprising 7000 or 8000 specimens, and a good series of Australian Spiders.

The Mollusca, though not nearly so numerous as the Insects, are yet a very numerous collection, which Mr. Masters estimates at not less than 50,000.

Of the numbers of the other Invertebrata, no estimate has been formed; but there are many thousands of specimens of Worms, Echinoderms, Coelenterates, and Sponges.

Besides these zoological specimens, there is also a considerable, though much less important, collection of geological specimens from various sources.

The building in which these Macleay collections are now housed at the University, contains a single spacious hall, 200ft. long by 76ft. wide. Around this runs a gallery, 13ft. wide at the sides and 26ft. at the ends. The space below the gallery is divided by partitions into a series of bays, eleven on each side, each bay having a large window. The presence of the gallery, divided, like the space below it, by a number of partitions, and capable of being completely closed off from the body of the hall, will enable us very conveniently to effect that division of the Museum into general or public collections and special or scientific collections which is now so generally aimed at. In this gallery will be placed such portions of the collections as are not required in the series on exhibition below for the benefit of students and other visitors: these will comprise the unmounted skins of Birds and Mammals and all the duplicate specimens of all kinds, together with the cabinets of Insects. These special collections will be open for study, with permission of the Committee, to any student of zoology wishing to investigate any particular group.

One of the special features of the Macleay Museum ought, in my opinion, to be a good, well-displayed series illustrative of the Australian fauna in all its branches. For this there is ample material in the Macleay collection, which would require but little supplementing to render the series as complete as need be. This will occupy a considerable part of the available space. While this faunistic collection will form an important feature of the Museum and will always be the most interesting to the



general visitor, a University Museum would fall very far short of its purpose did it contain nothing more. For the benefit of the general student of science, there must be a series of specimens and preparations, accompanied by models and explained by diagrams, illustrative of the morphology and life-history of all the various main groups, both of plants and animals, together with small collections illustrative of various special biological phenomena, such as variation, mimicry, and the like. Such a series as this aims at enabling the student to see for himself as many as possible of the most characteristic features in the external form, internal structure, the embryology, conditions of life, and the like, of the leading types of animal and plant life. With the slender resources at present at our disposal, only very slow progress can be made in this important department of the Museum ; but a commencement at least has been made, and when the necessary cases are constructed, there will soon be a good educational series for the use of the student of science. Another section of the Museum has been set apart for the geological collections, comprising all the mineralogical, petrological, and palæontological specimens previously belonging to the University, supplemented by those in the Macleay collection. And, finally, the ethnological collections, which are not very large, will occupy several of the bays.

During the greater part of the life of this Society, Macleay has provided it with a home, and in 1855 he presented to it the commodious building in which we are now met, containing not only this meeting hall and library with the secretary's office and council-room attached, but also the spacious laboratory adjoining. Most of you will remember the manner in which this presentation was made on Oct. 31st, 1855. After relating how the Society had been previously accommodated with a temporary home (the rent of which was paid by himself, though this he omitted to mention), he went on to say—"The necessity, however, for more room, and I may add, less noise, has induced me to build the edifice we are now assembled in, which I beg to present, such as it is, to the Society for the period of 89 years, the unexpired term of my original lease of the ground for 99 years."

He spent, moreover, a large sum of money in the purchase of books for the Society's library, and, when these were unfortunately destroyed by fire on the burning down in 1882 of the Garden Palace, in which the Society was then lodged, he immediately set to work anew to form the fine collection of scientific works constituting the greater part of our library as it now stands.

By Sir William Macleay's generosity several workers in various branches of science have been enabled to carry on their researches here or in the former home of the Society in Phillip-street, without requiring to expend their time and energy on bread-winning work. Dr. R. von Lendenfeld was for two years working in this way under the auspices of the Society, and the results of his work have seen the light in a large number of papers treating chiefly of the Sponges and Hydrozoa published in our Proceedings. Succeeding Dr. von Lendenfeld, Dr. Oscar Katz for several years worked in the Linnean laboratory, the outcome of his researches being a series of contributions to Bacteriology which have been published in the Proceedings. Mr. Skuse has also been engaged under Sir William Macleay's auspices in entomological work, and has thus been enabled to make a very good beginning towards filling in a previously blank space in our knowledge of the Australian fauna by means of his numerous descriptions of Dipterous Insects of various families.

And, finally, I must not omit to mention that by his appointment by Sir William Macleay to the post of Director and Librarian of this Society, Mr. J. J. Fletcher has secured sufficient leisure in the intervals when his numerous secretarial and editorial duties have been less pressing, to carry on zoological work, the results of which are before us in his valuable papers on the Australian Earthworms, the Batrachia, and other subjects.

Not only did Sir William Macleay present this Society with this commodious building, and the greater part of its library, he also paid all salaries, defrayed the expense of the greater number of the plates, and gave it most generous and much-needed assistance in many other ways. So that it might be able to



maintain itself in the position to which he had raised it, he made over to it during his lifetime an endowment of £14,000, to which will be added, in accordance with his will, £6,000 more, so that the Society will be shortly in the possession of a sum sufficient, with its other sources of revenue, to enable it to carry on its work—to issue annually well illustrated volumes, to pay its officers, and to maintain and add to its library.

As you are all aware, by a provision of his will, he has left the munificent sum of £35,000 to be applied eventually to the foundation of four fellowships, to be called the Macleay Linnean Fellowships, and to be held by Bachelors of Science of the University of Sydney, who shall be engaged in research on some subject connected with natural science. The election to these is to be in the hands of the Council of the Linnean Society of N. S. Wales, and the results of the work done by the holders are to be published in the Society's Proceedings.

Now, I have a proposal to make which, I hope, will meet with your approval. This Society is very deeply indebted to Sir William Macleay, and it is felt that some appropriate means should be found of commemorating the generous actions to which I have just been directing your attention. And it has appeared to me and such of the Society as I have had the opportunity of consulting, that more appropriate in every way than any monument which we might erect, would be the publication of a *Macleay Memorial Volume* to contain a series of original contributions to botany, zoology and geology by members of the Society. Such a Memorial would, it appears to me, be peculiarly fitting, when we take into account the nature of the benefits which we aim at signalling, and the views and tastes of our benefactor; it would, moreover, if the contents of the volume were worthy of the occasion, be a monument of a lasting character, and one which would be before the eyes of the whole scientific world.

I should like, in conclusion, to say a few words as to the present position and prospects of the Society. You will hear presently the statement of the Honorary Treasurer as to our financial position; and also in what way it is proposed that the income

should be expended. We are thus assured in the possession of a commodious building and an excellent library ; we have sufficient funds for the payment of the necessary salaries, and sufficient for the printing and illustration of the Proceedings. But let me remind you, in the contemplation of this condition of material prosperity, that the *spiritual wellbeing*, if I may so call it, of the Society is by no means assured by this ; and that it can only be by continuous and well-directed effort that the essential objects of such an association as ours can be carried out.

Our object is defined in our Rules and in our Act of Incorporation as being "the cultivation and study of the science of Natural History in all its branches." Like all kindred associations we must keep before us as our principal end and aim the advancement and extension of exact knowledge in the departments of science with which we deal. Such a Society as ours would be falling greatly short of its duty could it not show every year in its published Proceedings some substantial gain to science, some little area, however small, added to the domain of our knowledge of Nature. It is true that the Society as such can do little in this way ; new accessions to science must always be made by the individual worker, and the number of such workers in such a Society as ours—though I hope they will increase as time goes on and scientific training becomes more widely diffused—can never be very great. But one of the duties of the Society, which its members should keep steadily in view, is to keep up and increase the number of such investigators, and to do everything in its power to aid them in their work and facilitate the publication of its results. Now I think we can all do something in this direction : we can all do something to extend a taste for the study of natural science, and we may even occasionally have an opportunity of encouraging one or another to devote himself to it. In extending the sphere of the Society's influence, even in attending its meetings, we are doing something to promote the objects at which it aims. Were such members of the Society as are not active workers in natural science to withdraw all but their nominal and pecuniary connection with our body, the working members would, I am assured,

sustain a heavy loss. For though the intrinsic value of the scientific work done can only be finally decided upon by a tribunal that does not belong either to the present time or to any particular society or particular country, yet the sympathy and co-operation of those with whom they come in immediate contact must always be of importance to investigators in science, as to workers in any sphere of life.

The choice of subjects for investigation which the devotee of biological science resident in Australia has before him is a very large one. To the botanical worker there are very numerous tempting fields promising rich harvests. For instance among the Algæ the abundant *Siphonææ* that live on the tropical parts of the coast are only known as regards their general form; and their structure and especially their development offer a promising field of investigation. The same holds good of the Red Seaweeds; for though many have been described by Agardh, Sonder, Harvey and others, yet in the case of many—one might say most—of the genera that seem to be specially characteristic of our coasts little is known but the form of the thallus.

The development of some of the Australian *ferns* is unknown, and in the case of such remarkable genera as *Schizæa*, *Lygodium*, and *Alsophila* is a study likely to lead to interesting results. Among the *Lycopodiaceæ* we have three remarkable genera—*Tmesipteris*, *Psilotum* and *Phylloglossum*; and as absolutely nothing is known respecting their development, whoever should succeed in tracing the germination of the spore and the formation of the prothallium stage would be making an important contribution to botanical science.

Among the higher plants many subjects of enquiry lie before the Australian botanist. For example the embryonic development of the Proteads and the development of the parts of the flower I might mention as untouched subjects, for the investigation of which a botanist resident in Australia has special opportunities. The mode of fertilisation of members of this order is also still a matter of conjecture. Another promising subject for investigation

in the Proteaceæ is the leaves. While comparatively uniform and highly specialised as regards the structure of their flowers, the members of this characteristic order are, as you are aware, distinguished by a great amount of variety in the form and texture of the leaves: it is the foliage, in fact, that is protean much more than the flower; and the remarkable circumstance connected with this variability in the leaves is that widely divergent forms of leaf are to be found in members of the order otherwise closely allied. How are such extreme differences to be explained? It seems probable, *a priori*, that a thorough-going investigation would reveal, in some instances at least, a definite usefulness to the plant of the particular form of leaf to be observed; and perhaps this order is one through which general results on the meaning of various forms of leaves might favourably be attained. There is a peculiarity in the *minute structure* of the leaves of certain *Proteaceæ* (species of *Banksia*) which they share with the Oleander, that has not been fully accounted for. This consists in the presence, on the under surface, of numerous very minute apertures bordered with hairs, leading into cavities in the substance of the leaf—the stomata being entirely or almost entirely confined to these cavities, instead of being dotted over the general surface. Whether, as has been conjectured, the object of this arrangement is to prevent the stomata from being clogged by excessive moisture, transpiration thus being seriously interfered with, remains to be determined: it seems unlikely, taking into account the circumstances under which the *Banksias* now live, that any such special modification to provide against excess of moisture is required.

The zoologist has before him in Australia a very extensive field. Leaving out of account such departments of his subject as can equally well be dealt with in other parts of the world, there are many themes for dealing with which he has special advantages owing to his position in Australia. Let me briefly direct your attention to a few of these.

The *Protozoa* are so cosmopolitan in their distribution that they do not display very marked geographical features. Most of the

*Rhizopoda* and *Infusoria* which we find in the sea or in fresh water here are nearly related to, though very often clearly distinguishable from, northern forms. Some peculiar forms have, however, been observed, and I think that a student of any of the groups of Australian *Infusoria* or *Rhizopoda* need not despair of finding something new of importance and interest. Among the *Sporozoa* a species of *Myxobolus* (*Myxosporidia*) is common as a parasite of certain frogs, and affords a good opportunity for the investigation of the unknown life-history of that group. Sponges are so abundant and varied that the working out of the embryology which is thoroughly known in so few cases, ought to be a fruitful subject of study.

The Australian lower groups of worms have only been examined as regards certain small and restricted groups—that which has hitherto received most attention being that of the Land-Planarians. The *Rhabdocœla* and the marine *Polycladide* and *Tricladide* are, with the exception of a few superficially described (by Stimpson and Schmarda), entirely untouched; and the same holds good of the Trematodes and Cestodes, while I only know of three published descriptions of Australian species of marine Nemertean. Dr. Cobb is expected to render a good account of the free-living Nematodes; but the parasitic forms are in the same position as the Cestodes and Trematodes, and the same may be said of the *Acanthocephala*. No Australian *Archiannelida* are known; but they and the Australian *Enteropneusta* are biding their time.

Of the *Chaetopoda*, on the other hand, we know many. Prof. Baldwin Spencer and Mr. J. J. Fletcher are both occupied with the terrestrial *Oligochæta*; but the fresh-water *Oligochæta*, though numerous and varied, have not yet received their due share of attention. Of the *Polychæta* there are a number of families that have not even been touched; though, judging from what is already known, there is not likely to be a wide divergence from the fauna of other regions. Of the Leeches only three or four species have been described out of a considerable number that have been observed. A good deal still remains to be done with the *Gephyrea*, though a few have been superficially described by

Baird and others. Neither *Echiurus* nor *Sternaspis* have as yet been observed in Australian seas.

In the great group of the Mollusca one of the most promising entirely new fields for research is the development of the Pearly Nautilus, for though this survivor from remote times is only occasionally found on the Australian coast, yet operations against it would best be conducted with Australia as a base. The development of the Paper Nautilus (*Argonauta*) is also an important desideratum in Zoological science; but unhappily the visits of the Argonauts are not to be reckoned on. The development of *Spirula*, on the other hand, ought not to be beyond the reach of well-directed efforts.

Among the *Brachiopoda*, *Waldheimia flavescens* is somewhat abundant at some points in Port Jackson, and whoever takes it in hand may contribute something of importance to our somewhat scanty knowledge of the development of this class.

There is much to be done in describing species in the various orders of *Crustacea* and *Insecta*, while among the *Arachnida* whole sections remain untouched.

The Australian *Tunicata* offer a promising field for research. Professor W. A. Herdman has taken in hand the description of a number of them, and we hope soon to have his account of them; but there is much in this class that can only be adequately done on the spot with abundance of fresh material. The observer in Sydney ought, I may here remark, to be peculiarly favourably situated for working out the development of that most interesting of all Tunicates—*Appendicularia*—since both *Appendicularia* proper and *Fritillaria* occur in abundance in Port Jackson right up to the wharves of Sydney.

The investigation of the development of some of the peculiar Australian forms of fishes would be of immense importance and interest. I may mention the Port Jackson shark (*Heterodontus* or *Cestracion*), *Trygonorhina*, *Pristiophorus*, and *Callorhynchus* as particularly tempting. The development of *Ceratodus* is still a desideratum; but I trust we shall hear something about it before long.



There are so many peculiar forms of Australian *Batrachia* that a life-time might be spent in working out the development of some of the more interesting forms. *Pseudophryne*, with its limited number of large ova, undergoing the early stages of their development out of the water, and that remarkable genus *Chelydobatrachus* may be mentioned as particularly likely to yield important results.

Among the reptiles the development of the crocodiles is now, since the publication of the results of Clarke's and Voeltzkow's observations, no longer *terra incognita*; but the peculiar fresh-water tortoises of Australia would, doubtless, well repay investigation in this direction, and so, no doubt, would many of the genera of *Lacertilia* and *Ophidia*.

Of the birds, the anatomy of some of the peculiar families, such as the scrub birds, the lyre birds, and others, is only known (and that imperfectly) as regards the skeleton. The most interesting of the birds, as regards the development, is, of course, the emu, some of the stages of which I have had the opportunity of examining, though the later stages still require to be investigated.

Our information on the development of those characteristic and remarkable Mammals—the Monotremes—is still of the most meagre character, and among the Marsupials not only is there little known as to the embryology, but in many cases, such as *Peragalea*, *Chaeropus*, and *Hypsiprymnodon*, even the anatomy of many of the systems of organs is unknown.

The foregoing is, I am conscious, a very imperfect sketch of some of the things we do not know; but it may serve to indicate how much still remains to be done by the biologist in Australia, while it may by chance be of use in suggesting some subjects of investigation likely to yield interesting and important results.

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On the motion of Dr. Cox, a vote of thanks was accorded to Professor Haswell for his able address.

Dr. Cox moved and Mr. Maiden seconded,—“That, in the opinion of this meeting, in order to commemorate in a suitable manner the late Sir William Macleay's benefits to the Society